

AMENDMENTS TO THE CLAIMS

Claims 1-23 (Canceled)

24. (Currently Amended) A paging control method executed by a paging control apparatus in a mobile network including a core network, a radio access network, and a mobile communication terminal, wherein the radio access network includes a plurality of base stations, and a radio network controller serving as the paging control apparatus, the paging control apparatus ~~includes~~ including at least two controllers ~~that functionally distribute among which controlling of~~ communication between the core network and the base stations is functionally distributed, ~~to control the communication~~, one of the at least two controllers being a first controller processing a paging message transmitted from the core network to the radio access network, and wherein the mobile communication terminal performs communication with at least one of the base stations via a radio interface, the paging control method comprising:

receiving at the first controller the paging message transmitted from the core network to the radio access network;

judging at the first controller a transmission destination of the paging message by:

determining whether a signal connection exists between the mobile communication terminal and the radio access network or the core network,

when the signal connection exists, judging the transmission destination to be one of the at least two controllers that controls the signal connection, and

when the signal connection does not exist, judging the transmission destination to be one of the at least two controllers that controls a predetermined base station of the base stations or one of the base stations that is identified from the paging message; and

transmitting from the first controller the paging message to a controller that controls a base station at the transmission destination.

25. (Canceled)

26. (Currently Amended) The paging control method according to claim 24, ~~5~~, wherein

the paging message is transmitted by multicast transmission

~~_____ there are a plurality of any one of the base stations and the controllers, and~~
~~_____ when there are the plurality of any one of the base stations and the controllers, the act of transmitting includes transmitting the paging message according to multicast transmission.~~

27. (Canceled)

28. (Currently Amended) A paging control apparatus in a mobile network that includes a core network, a radio access network, and a mobile communication terminal configured to perform communication with a base station via a radio interface, wherein the radio access network includes a plurality of base stations and a radio network controller serving as the paging control apparatus, ~~the radio network controller includes paging control apparatus comprising:~~

~~at least two controllers that functionally distribute among which controlling of communication between the core network and the base stations to control the communication is functionally distributed, one of the at least two controllers being a first controller configured to: used as the paging control apparatus, and wherein the mobile communication terminal is configured to perform communication with the base station via a radio interface, the paging control apparatus comprising:~~

~~_____ a processing unit configured to~~
~~_____ receive a paging message transmitted from the core network to the radio access network,~~

~~_____ judge a transmission destination of the paging message by:~~
~~_____ determining whether a signal connection exists between the mobile communication terminal and the radio access network or the core network;~~
~~_____ when the signal connection exists, judging the transmission destination to be one of the at least two controllers that controls the signal connection; and~~
~~_____ when the signal connection does not exist, judging the transmission destination to be one of the at least two controllers that controls a predetermined base station of the base stations or one of the base stations that is identified from the paging message; and to~~

_____transmit the paging message to ~~a predetermined mobile communication terminal~~ the transmission destination.

29. (Currently Amended) The paging control apparatus according to claim 28, further comprising:

a connection information registering unit configured to register signal connection information including a first indication of whether a first connection between the mobile communication terminal and the radio access network exists, a second indication of whether a second connection between the mobile communication terminal and the core network exists, and a specified controller configured to control ~~any one of the first connection and or the second connection~~, wherein the first controller refers to the signal connection information to judge the transmission destination to the specified controller

~~_____the paging message is a paging message sent to a mobile communication terminal having any one of the first connection and the second connection, and~~

~~_____when the paging message is the paging message sent to the mobile communication terminal having any one of the first connection and the second connection, the processing unit refers to the signal connection information to specify any one of a controller and a base station that controls the connection, and transmits the paging message to any one of the controller and the base station.~~

30. (Currently Amended) The paging control apparatus according to claim 29, wherein the signal connection information includes

first connection information including the first connection, a first identifier that temporarily identifies the mobile communication terminal, and the specified ~~a first controller~~ configured to control the first connection, and

second connection information that associates the first identifier with a second identifier having a number form peculiar to the mobile communication terminal, if the mobile communication terminal sets the second connection, and

upon receiving a paging message including the second identifier from the core network,

the ~~processing unit~~ first controller refers to the signal connection information to judge the transmission destination ~~specify the first controller, which controls the first connection associated with the second identifier included in the paging message, and transmits the paging message to the first controller.~~

31. (Currently Amended) The paging control apparatus according to claim 30, wherein the second connection information further includes a third identifier having a number form peculiar to the core network and associated with the first identifier and the second identifier, when the core network notifies the mobile communication terminal of the third identifier, and

upon receiving a paging message including the third identifier from the core network, the ~~processing unit~~ first controller refers to the signal connection information to judge the transmission destination ~~specify the first controller, which controls the first connection associated with the third identifier included in the paging message, and transmits the paging message to the first controller.~~

32. (Canceled)

33. (Currently Amended) The paging control apparatus according to claim 29, 32, wherein

~~— a plurality of any of the controllers and the base stations are specified, and~~
when the transmission destination is judged to include multiple ~~plurality of any of the controllers and the or base stations are specified~~, the ~~processing unit~~ first controller copies the paging message, and transmits the copied paging message to all the multiple ~~controllers and all the or base stations.~~

34. (Currently Amended) The paging control apparatus according to claim 29, 32, wherein the paging message is transmitted by multicast transmission

~~— a plurality of any one of the controllers and the base stations are specified, and~~

~~_____when a plurality of any one of the controllers and the base stations are specified, the processing unit transmits the paging message to any of the controllers and the base stations according to multicast transmission.~~

35. (Currently Amended) The paging control apparatus according to claim 29, 32, wherein

~~a call area is registered in advance,~~

~~_____the one of the at least two controllers judged as the transmission destination further includes~~

~~_____a second controller that controls a base station within a call area of the mobile communication terminal decided by the core network, and~~

~~_____a third controller that controls data transfer to the base station controlled by the second controller, and~~

~~if the controller further includes the second controller and the third controller, upon receiving a the paging message from the core network, the ~~processing unit~~ first controller transmits the paging message to ~~any one of the second controller and or the third controller~~ using a multicast address of ~~any one of the second controller and or the third controller~~ associated with the call area, the multicast address having been registered in advance.~~

36. (Currently Amended) A radio access network comprising:

a plurality of base stations configured to perform communication with a mobile communication terminal via a radio interface; and

a radio network controller that is connected to a core network and that includes at least two controllers among which controlling of that functionally distribute communication between the core network and the base stations is functionally distributed, ~~and that is configured to control the communication~~, wherein

~~_____the at least one of the two controllers includes a first controller is a paging control apparatus including a processing unit configured to process~~

~~_____receive a paging message transmitted from the core network to the radio access~~

network,

judge a transmission destination of the paging message by:
determining whether a signal connection exists between the mobile
communication terminal and the radio access network or the core network;
when the signal connection exists, judging the transmission destination to
be one of the at least two controllers that controls the signal connection; and
when the signal connection does not exist, judging the transmission
destination to be one of the at least two controllers that controls a predetermined base station of
the base stations or one of the base stations that is identified from the paging message, and
transmit the paging message to the transmission destination.

37. (Currently Amended) The radio access network according to claim 36, wherein
the ~~paging control apparatus~~ first controller further includes a connection information
registering unit configured to register signal connection information including a first indication
of whether a first connection between the mobile communication terminal and the radio access
network exists, a second indication of whether a second connection between the mobile
communication terminal and the core network exists, and a specified controller configured to
control ~~any one of the first connection and or the second connection, and~~
the first controller refers to the signal connection information to judge the transmission
destination to be the specified controller
~~the paging message is a paging message sent to a mobile communication terminal having~~
~~any one of the first connection and the second connection, and~~
~~when the paging message is the paging message sent to the mobile communication~~
~~terminal having any one of the first connection and the second connection, the processing unit~~
~~refers to the signal connection information to specify a controller that controls the connection,~~
~~and transmits the paging message to the controller.~~

38. (Currently Amended) The radio access network according to claim 37, wherein
the signal connection information includes

first connection information including the first connection, a first identifier that temporarily identifies the mobile communication terminal, and a ~~first~~ the specified controller configured to control the first connection, and

second connection information that associates the first identifier with a second identifier having a number form peculiar to the mobile communication terminal, if the mobile communication terminal sets the second connection, and

upon receiving a paging message including the second identifier from the core network, the ~~first controller processing unit of the paging control apparatus~~ refers to the signal connection information to judge the transmission destination ~~specify the first controller, which controls the first connection associated with the second identifier included in the paging message, and transmits the paging message to the first controller.~~

39. (Currently Amended) The radio access network according to claim 38, wherein the second connection information further includes a third identifier having a number form peculiar to the core network and associated with the first identifier and the second identifier, when the core network notifies the mobile communication terminal of the third identifier, and

upon receiving a paging message including the third identifier from the core network, the ~~first controller processing unit of the paging control apparatus~~ refers to judge the transmission destination ~~the signal connection information to specify the first controller, which controls the first connection associated with the third identifier included in the paging message, and transmits the paging message to the first controller.~~

40. (Canceled)

41. (Currently Amended) The radio access network according to claim 37, 40, wherein the one of the at least two controllers judged to be the transmission destination includes multiple a plurality of the controllers, are specified, and
~~when the plurality of the controllers are specified, the processing unit of the paging~~

~~control apparatus~~ the first controller copies the paging message, and transmits the copied paging message to all the multiple controllers ~~and or all the base stations controlled by the multiple controllers.~~

42. (Currently Amended) The radio access network according to claim 37, 40, wherein the paging message is transmitted by multicast transmission
~~_____ a plurality of the controllers are specified, and~~
~~_____ when the plurality of the controllers are specified, the processing unit of the paging control apparatus transmits the paging message to any one of the controllers and the base stations according to multicast transmission.~~

43. (Currently Amended) The radio access network according to claim 37, 40, wherein the one of the at least two controllers judged as the transmission destination includes
~~_____ a call area is registered in advance,~~
~~_____ the controller includes~~
_____ a second controller that controls a base station within a call area of the mobile communication terminal decided by the core network, and
_____ a third controller that controls data transfer to the base station controlled by the second controller, and

~~if the controller further includes the second controller and the third controller, upon receiving a~~ the paging message from the core network, ~~the first controller processing unit of the paging control apparatus transmits the paging message to any one of the second controller and or the third controller using a multicast address of any one of the second controller and or the third controller associated with the call area,~~ the multicast address having been registered in advance.

44. (Currently Amended) The radio access network according to claim 43, wherein a ~~the~~ multicast address of the third controller associated with the second controller is registered in advance, and

upon receiving the paging message from ~~the paging control apparatus~~ first controller, the

second controller transmits the paging message to the third controller using the multicast address.

45. (Currently Amended) The radio access network according to claim 44, wherein a multicast address including all base stations controlled by the third controller is registered in advance, and
upon receiving the paging message from the second controller, the third controller transmits the paging message to all the base stations controlled by the third controller using the multicast address.

46. (Currently Amended) The radio access network according to claim 43, wherein a multicast address including all base stations controlled by the third controller_s is registered in advance, and
upon receiving the paging message from the second controller, the third controller transmits the paging message to all the base stations controlled by the third controller using the multicast address.